

Visiting Researcher Profile



Dr. Aprille J. Ericsson

Aerospace Engineer
NASA Goddard Space Flight Center

Research Specialty: Spacecraft Attitude Control Systems

Bio

Dr. Ericsson grew up in Brooklyn, NY, where she attended school through junior high. She was awarded a scholarship to the Cambridge School of Weston, MA, for high school. She attended the Massachusetts Institute of Technology, receiving a B.S. in Aeronautical and Astronautical Engineering. She received her Masters of Engineering and Ph.D. in Mechanical Engineering in Aerospace from Howard University. Her graduate research focused on the development of procedures for the design of ‘optimal digital controllers’ for future large orbiting space structures. Dr. Ericsson has been a guest researcher at Harvard/Radcliffe University and has a certificate for leadership and management from John Hopkins University.

Dr. Ericsson spent most of her engineering career at NASA’s Goddard Space Flight Center (GSFC). She worked in Guidance Navigation & Control, conducting spacecraft simulations to analyze and predict spacecraft dynamic behavior during flight, and to determine the best control methods for spacecraft attitude and structural vibration. She has also worked at NASA HQ as a Program Executive for the Earth Science Enterprise and a Resource Manager for the Space Science Enterprise. Over the last 5 years, she has been an Instrument Manager in NASA Goddard’s Instrument Systems Branch, leading and managing teams of scientists and engineers on various instrument proposals and flight missions. Dr. Ericsson was Instrument Manager for the NIRSpec detector slated for the James Webb Space Telescope, and for the Fast Plasma Instrument on the Magnetospheric Multiscale mission. Last year, Dr. Ericsson spent 5 months on detail as a Loaned Executive to the Combined Federal Campaign, where she was responsible for raising ~\$2M from federal workers for charities across the nation. Upon return to Goddard, she was project engineer for a technology development mission to validate a miniature thermal loop heater/radiator system. Currently, Dr. Ericsson is the Instrument Manager for a proposal for an Advanced X-Ray Polarimeter mission, and Project Engineer for the Lunar Orbiter Laser Altimeter Instrument—which will provide topographic data to map the lunar surface in preparation for future moon exploration.

Examples of Classroom Presentations

***Controlling the Attitude of a Spacecraft* [Grades: 9-12]**

Using a gyroscopic type device, Dr. Ericsson will demonstrate how one applies forces, which leads to torque being applied to the spacecraft, to put it in the correct attitude (position and location). Learn how an aerospace engineer, who specializes in attitude control, uses controllers and sensors to monitor and maintain the spacecraft's stability during its mission.

***Abodes Away From Home* [Grades: K-12]**

As an aerospace engineer at the GSFC, Dr. Aprille Ericsson has worked on Earth science, space science and exploratory space borne missions. She will discuss her engineering exploits that have provided information about our neighborhood, Earth, and the universe, and plans to explore, visit and create other abodes. She will also describe how an aerospace engineer, who specializes in attitude control, uses controllers and sensors to monitor and maintain the spacecraft's stability during its mission.

***Egg Drop Contest* [Grades: K-12]**

You and your engineering team will create a protective structure similar to a spacecraft for an instrument called "The Egg". You will then drop it one story. The least costly spacecraft/structure with an unbroken instrument/egg wins this fun engineering contest!

Examples of Family/Public Program Presentations

Satellites, Rocketry & Manned Space Flight

This talk will cover Dr. Aprille Ericsson's fascinating work as an aerospace engineer, ranging from her university research to NASA Goddard Space Flight Center satellite projects.

With this in mind, she has applied for NASA's astronaut program; unfortunately, over the past several years, she has been placed on medical review for asthma. Last year, she received a pre-screening medical application and several of her references were contacted.

Dr. Ericsson's Ph.D. research objective at Howard University was to develop practical design procedures that can be used in conjunction with optimal digital controllers for future orbiting large space structure systems like the International Space Station.

Dr. Ericsson feels obligated to help spur the interest of minorities and females in the math, science and engineering disciplines. Without diversity in all fields, the United States will not remain technically competitive. Therefore, she is a member of the NASA GSFC Speakers Bureau and the Women of NASA Group and has been an Aerospace-Rocketry-Mechanical engineering professor, computer instructor, career advisor, mentor and friend for many students. She works with all student age groups; for she feels it is important to create an early mathematical and/or scientific interest in young people and maintain it through out their later years. She has also created an email pipeline for under-represented groups in the technology fields to distribute the announcements for federal grants, internships and employment. As a proposal and application reviewer for NASA GSFC and Headquarters programs, she tries to ensure that there is a fair review of all applicants regardless of race or gender.

Searching for Abodes of Life in the Universe

Often we think of our house as our home. It provides us with shelter, water, protection, and warmth against the outside environment. Your abode allows you to live comfortably and survive and thrive on Earth. Similarly, the Earth is like your house providing a protective environment against space.

From space, Earth looks like a colored ball. Its white clouds, brown landmasses and blue oceans provide air, land and water. The biosphere—land, air and water conspire to create an environment suitable for life.

Earth is a special place and it is unique amongst the planets in our solar system. The Earth is also your home, your abode. Are there other neighborhoods like our own? How does one search for other abodes of life in the universe? From space you can get a more global view of the Earth than down on the ground, one can also more clearly observe other celestial bodies and planetary systems. As an aerospace engineer at the NASA GSFC, Dr. Aprille Ericsson has worked on Earth science, space science and exploratory space borne missions. She will discuss her engineering exploits that have provided information about our neighborhood, Earth and the universe, and plans to explore, visit and create other abodes.